STATEMENT OF BASIS
GENPAK LLC
Montgomery, County
Facility # 209-0041

On May 5, 2016, Genpak submitted their third Major Source Operating Permit (MSOP) renewal application for its polystyrene foam food container manufacturing operations. This facility initial MSOP was issued on November 6, 2001, and subsequently their first and second renewals were issued on November 6, 2006 and November 6, 2011, respectively. Genpak's current MSOP consist of: Four (4) Extrusion Lines, Six (6) Thermoformers with Associated Equipment, and Three (3) Fluff Silo Baghouses – Polystyrene Foam, Paper Conversion and Molded Fiber Operations. Genpak has requested to maintain their current VOC facility wide emissions limit of 249.2 tons per year.

OPERATION:

Genpak's operations consist of three manufacturing productions: 1. Polystyrene food containers, 2. Paper cups, and 3. A molded pulp forming system. This facility's SIC codes are 3086, 3089, 2611, and 2656 for all of its operations, and their normal operating schedule is 8,760 hr/yr.

Polystyrene Food Containers Description:

This plant produces foam polystyrene food trays and containers using a tandem system of extruding (4 units) expanded polystyrene foam sheets

(EPS). The sheet rolls are aged 3 to 7 days. The final product is then formed by 6 thermoformers, where the sheet is heated and pressed into the desired shape. In addition, 3 of the 6 thermoformers have printers that apply water-reducible ink on custom jobs (less than 10% of the product). The raw materials in this process are: polystyrene pellets, VOC blowing agent, talc and ink. (Scrap generated by this system, is processed in the Grinding & Storage System).

The Grinding System includes six (6) Thermoforming trimmers, one (1) 60 hp sheet grinder, one (1) 50 hp sheet grinder, and three (3) 40' x 12' diameter fluff silos with bin vent filters. Trimmings are pneumatically conveyed to any of the 3 fluff (recycle) silos (ID# 3, 4, 7). Each silo has a baghouse for particulate control. Other waste sheet material is ground in the sheet grinders and conveyed to the same recycle silos.

The MSOP's iso-pentane and butane emissions are limited to 710 tpy, which is equivalent to VOC emissions limit of 249.2 tpy. The retention rate for both iso-pentane and butane is limited to 93% in the polystyrene foam.

Paper Cups Description:

This process converts rolls of paper into soufflé and cone cups for food and institutional purposes. The rolls of cup stock are received by truck, fed

through the wax bath and slit to size. The slit rolls are then fed into the cup making machines, punched, formed, and conveyed through tubes to a central packing station. Water and wax are the only additives to the paper. The bailer has a baghouse for particulate control. The bales are used in their Molded Fiber operations.

Molded Pulp Description:

This process is using the waste from the paper cups process. The pulping system generates moldable fiber slurry that is approximately 5% fiber to 95% water and utilizing six TPM fiber molding thermoforming machines. The machines collect, mold and dry the fibers into food service hinged containers, plates and bowls. The total VOC emissions from this process are expected to be less than 0.75 tons per year and will be incorporation into their permit limitation.

EMISSIONS:

Expected hours of operation **8,760 hr/yr**

A. Polystyrene used per month 40,567,560 lb or **4,631 lb/hr**
B. Total Polystyrene = **70%** (Virgin)+**30%** (Recycle)
C. Blowing agent (VOC) is **3.5%** of Polystyrene by weight (4,631 X 0.035 = **162.1 lb/hr**)
D. From test data blowing agent (VOC) retained in Polystyrene foam = **93%**
   Extrusion losses of blowing agent (VOC) = (1 - 0.93) X (162.1 lb/yr) = **11.3 lb/hr** = **49.7 tpy**

Potential VOC Emissions from foam processing (Extruding, Thermofolding, Grinding & Storage and Repelletizing)

Potential VOC = Production rate x Percent blowing agent x ((100% - Retainage %) + (Scrap % x Retainage %)) = **56.6 lb/hr**

This accounts for 7% VOC loss from Extruding & Thermofolding and 100% VOC loss from scrap processing. Based on preliminary VOC emission test at other Genpak facilities, the representative fluff silos combined averaged emission rate was approximately 56% of VOC in scrap material. The remaining 44% of VOC in the scrap is lost in the Repelletizing process.

VOC from the scrap is = Potential VOC – Extruding & thermoforming loss

VOC from the scrap is = 56.6 lb/hr – 11.3 lb/hr = **45.3 lb/hr**

Grinding/storage emission rate = 45.3 lb/hr x 56% = 25.3 lb/hr = **110.9 tpy**

Repelletizer emission rate = 45.3 lb/hr x 44% = 19.9 lb/hr = **87.2 tpy**

E. VOC emissions from the scrap processing: 110.9 + 87.2 = **198.1 tpy**

F. Potential VOC = ((100% - Retainage %) + (Scrap % x Retainage %) x Production rate x Percent blowing agent

Potential VOC = ((7% + (30% x 93%)) x 4631 lb/hr x 3.5% = **56.6 lb/hr**

Annual VOC = Hourly potential VOC (56.6 lb/hr) x 8,760 hr/yr / 2,000 lb/ton = **247.8 ton/yr**

This facility also has a printing capability with three of their six thermoformers and a part washer that emits some VOCs and HAPs emissions. The only HAP (Glycol Ethers) emissions at Genpak are emitted from the printing operations.

G. HAP = 408 gallons/year x 0.32 lb/gal = 130.6 lb/yr = **0.07 tpy**
(Paint) VOC Emissions = 408 gallons x VOC content (4.17 lb/gal) = 1701 lb/yr = 0.85 tpy + (Part waster) 0.5 tpy = **1.35 tpy**

Total facility wide VOC emissions = **249.2 tpy**

H. Mass balance calculations:

VOC retained in product (sold) = Gross VOC blowing agent used – extruding/thermofolding VOC loss – scrap process VOC loss

VOC retained in product (sold) = **462.2 tpy**

Mass Balance:

Annual Gross VOC blowing agent used	710.0
VOC blowing agent retained in product (sold)	-462.2
Net process VOC subject to emission blowing agent	247.8
VOC (paint & part washer)	+1.35
Facility wide VOC emissions (requested)	**249.2 tpy**

The allowable PM emissions are less than 10.0 tpy, using $E = 3.59P^{0.62}$. Particulate Matter emissions are regulated under ADEM Rules 335-3-4.01(1) and 335-3-4-.02. This facility's uncontrolled PM emissions exceed the major source threshold limit of 100 tons per year.

Greenhouse Gases (GHG) Applicability – The facility doesn't meet the criteria for GHG reporting requirements. There aren't any stationary fuel combustion units. No other criteria pollutants are emitted in sufficient quantities, actually or potentially, to exceed the major source threshold of 100 tons per year.

REQUIREMENT:

This facility is located in an attainment area for ozone. There are no NESHAPs, NSPS or State regulations applicable to this facility. Genpak LLC

requested to maintain their current iso-pentane usage, Genpak will remain a synthetic minor for PSD.

Monitoring of Emissions

Genpak's VOC and HAP emissions will be determined from material usage and reported to the Department quarterly. Also, based on the facility's potential PM emissions, Genpak is subject to Compliance Assurance Monitoring (CAM) – 40 CFR 64 for the control devices (ID# CD-01, CD-02, and CD-03) operated for the three (3) fluff silos (ID# 3, 4, and 7). Trimmings and other off-spec materials (waste) are pneumatically conveyed to any of three recycle fluff silos. Each silo has a baghouse for particulate control. Since the silo baghouses have uncontrolled emissions greater than, but controlled emissions less than, 100 tons, they are subject to "Small CAM" requirements. Genpak's silo baghouses CAM requirements are: **1.)** When operating, each baghouse is visually observed a minimum of once daily for greater than normal visible emissions as determined by previous observations. **2.)** The baghouse is cleaned annually and whenever observed emissions are greater than normal. **3.)** A log book of the daily visual observations is maintained and retained for at least five years. **4.)** Reports of the results of the visible emissions observations shall be submitted quarterly to the Department.

Permitting Fees

Title V major sources are subject to operating permit fees which charge the facility a yearly amount based on the actual emission rate of pollutants for the previous year.

Affected States Notification

Notification of the proposal of this major source operating permit will be sent to all affected states bordering Alabama.

RECOMMENDATION:

Based on the above analysis, I recommend that Genpak's existing Title V permit (209-0041) be renewed for another five years pending a public notice period and an EPA review.

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Clarence Fairer III
Chemical Branch
Air Division

June 28, 2016
Date

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